Philosophy 49 Exam #2

I. Translate the following complex statements into logical notation. Supply a key defining capital letters as complete simple statements. (2 pts. Each)

1. Donald Trump has a bad hair day, and so does Zachary.
2. Last night we either watched the Lord of the Rings Trilogy or Star Wars.
3. Winning the lottery is a sufficient condition for being rich.
4. Either Hillary Clinton will run for president in 2008, or if Tom Daschle runs then the Democrats will lose the election.
5. Neither Henry James nor Friedrich Nietzsche wrote *The Divine Comedy*, but Dante did.

II. For the following question, assume the following truth conditions: B=F, C=F, Y=F, Z=F. Determine the truth value of the following complex statement. Show your work. (5 pts.)

$(C \cdot Y) \vee [(B \vee Z) \rightarrow (Z \rightarrow Z)]$

III. Using the truth-table method, determine whether each of the following statements is a tautology, a self-contradiction, or a contingent statement. (5 pts. Each)

$A \vee \sim A$
$A \equiv [(A \vee B) \rightarrow H]$

IV. Using the truth-table method, determine whether the following two statements are logically equivalent, contradictory, and consistent or inconsistent. (5 pts.)

$C = D$ AND $(\sim D \rightarrow \sim C) \cdot (D \rightarrow C)$

V. Using the truth-table method, determine whether the following argument is valid or invalid. (10 pts.)

$P \rightarrow Q \ / \ \sim Q \vee P \ // \ \sim P$

VI. Using natural deduction (i.e. the proof method), show that the following arguments are valid: (10 pts. each)

1. $P \rightarrow Q$
2. $\sim Q$
3. $A \vee P \quad // A$

1. ~A · ~B
2. ~(A v B) → (C v D)
3. ~D // C

1. E
2. (E v E) → C // C v W

1. [(I v M) v G] → ~G
2. M v G // M

1. Q → (F → A)
2. R → (A → F)
3. Q · R // F = A

1. K → M
2. L → M // (K v L) → M

Extra Credit:

Show that the following arguments are valid using natural deduction: (5 pts. each)

1. C → (D v ~E)
2. E → (D → F) // C→ (E → F)

1. ~M → (N · O)
2. N → P
3. O → ~P // M

Symbolize the logical structure of the following argument. Then show that the argument is valid using natural deduction. (10 pts.)

If workers have a fundamental right to a job, then unemployment will be virtually nonexistent but job redundancy will become a problem. If workers have no fundamental right to a job, then production efficiency will be maximized but job security will be jeopardized. Workers either have or do not have a fundamental right to a job. Therefore, either unemployment will be virtually nonexistent or production efficiency will be maximized.